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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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09/006,777 01/14/98 HOOGENBOOM

C 100-010

EXAMINER

WM01/0810

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ART UNIT

PAPER NUMBER

2663

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08/10/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

# Office Action Summary

Application No.  
09/006,777

Applicant(s)  
Hoogenboom et al.

Examiner  
Jasper Kwok

Art Unit  
2663



-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on May 25, 2001
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-54 is/are pending in the application.
- 4a) Of the above, claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-54 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claims \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on Jan 14, 1998 is/are objected to by the Examiner.
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. § 119

- 13) ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
- a) ☐ All b) ☐ Some\* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \*See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

## Attachment(s)

- 15) ☒ Notice of References Cited (PTO-892)
- 16) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 17) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s). \_\_\_\_\_
- 18) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 19) ☐ Notice of Informal Patent Application (PTO-152)
- 20) ☐ Other:

Art Unit: 2663

## **DETAILED ACTION**

### ***Drawings***

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the “output controls are arranged to monitor the backlog of buffered data units in two or more of the plurality of data stores for delivery to their associated output ports...” must be shown or the feature(s) cancelled from the claim(s). No new matter should be entered.

### ***Specification***

2. The disclosure is objected to because of the following informalities: page 13, line 19, “Output control 560”, should be correct to “Input control 560.”

Appropriate correction is required.

### ***Claim Objections***

3. Claim 23 are objected to because of the following informalities: line 7, a plurality of data stores should be changed to the plurality of data stores. Appropriate correction is required.

Art Unit: 2663

***Claim Rejections - 35 USC § 112***

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claims 33-54 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

No support was found for the limitation in claims 33-54 stating “output controls are arranged to monitor the backlog of buffered data units in two or more of the plurality of data stores for delivery to their associated output ports...”

***Claim Rejections - 35 USC § 102***

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371© of this title before the invention thereof by the applicant for patent.

Art Unit: 2663

7. Claims 1, 5-10, 16-20 and 22 are rejected under 35 U.S.C. 102(e) as being anticipated by Ramamurthy et al.

Regarding claims 1 and 10, Ramamurthy et al. disclose a switch comprising a plurality of input ports (i.e. fig. 1, 100; input ports 1... M); a plurality of output ports (i.e. fig. 1, output lines 1.. M); and switch fabric (i.e. fig. 1, buffered switch, core switch bus, core switch LSI); wherein the data stores are arranged to buffer data units (i.e. figs 1 and 9, output buffers) for delivery to output ports (i.e. fig. 1, output lines 1... M), and if the backlog reaches a particular level (i.e. col. 22, ll. 42-52, backlog occurs when the output buffer is full), the output control (fig 1, CAC, bandwidth allocator), to enforce a rate limitation (i.e. fig. 9, col. 22, ll. 50-53; monitor back pressure and control data flow), wherein the additional data units in violation of the rate limitation are filtered (i.e. col. 22, ll. 53-66; violation of rate and filtered corresponds to full buffer means congestion and cells are dropped).

Regarding claims 5-9 and 16-20 and 22, Ramamurthy et al. disclose a switch including when backlog falls, the output lifts the rate limitation (i.e. col. 22, ll. 50-54; no back pressure signal if buffer is not full because after congestion drops, it is inherent to start transmitting to output again at the prior uncongested bandwidth to try to maximize transmission rate); buffers are associated with both ports with distinct priority; and limitation is enforces at both ends (i.e. fig. 9, col. 22, ll. 50-54).

Art Unit: 2663

***Claim Rejections - 35 USC § 103***

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 2-4, 11-15 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ramamurthy et al. in view of Hluchyj et al.

Ramamurthy et al. discloses input port (i.e. 100), but does not specifically disclose a priority for data units and using leaky bucket. However, Hluchyj designate a priority (i.e. fig. 4, col. 3, ll. 11-23) and high priorities (i.e. CLP=0) are not in violation while low priorities are (i.e. CLP=1) based on leaky bucket algorithm (i.e. 204). Therefore, it would have been obvious to an ordinary person skilled in the art at the time of the invention to include priorities and leaky bucket as taught by Hluchyj et al. with the method and switch of Ramamurthy et al. in order to regulate cell flow.

10. Claims 23, 28-30 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ramamurthy et al. in view of Khacherian et al.

Regarding claim 23, Ramamurthy et al. disclose a switch comprising a plurality of input ports (i.e. fig. 1, 100; input ports 1... M); a plurality of output ports (i.e. fig. 1, output lines 1... M); and switch fabric (i.e. fig. 1, buffered switch, switch bus, core switch LSI); wherein the data

Art Unit: 2663

stores are arranged to buffer data units (i.e. figs 1 and 9, CBR, VBR, output buffers) for delivery to output ports (i.e. fig. 1, output lines), and if the backlog reaches a particular level (i.e. col. 22, ll. 42-52, monitor buffer to see if full), the output control (fig 1, CAC, bandwidth allocator), to enforce a rate limitation (i.e. fig. 9, col. 22, ll. 50-53; back pressure), wherein the additional data units in violation of the rate limitation are filtered (i.e. col. 22, ll. 53-66; violation of rate and filtered corresponds to full buffer means congestion and cells are dropped). Ramamurthy et al. do not specifically disclose transmitting and monitoring "Requests" to enforce a rate limitation. However, Khacherian et al. teaches the usage of "Requests" to control the rate (i.e. fig. 2, request to release). Therefore, it would have been obvious to an ordinary person skilled in the art at the time of the invention to include using these request messages as taught by Khacherian et al. with the switch of Ramamurthy et al. in order to let the switch know there are cells ready to send and the desired rates and using that information to control congestion in the network.

Regarding claims 28-30 and 32, Ramamurthy et al. disclose a switch including when backlog falls, the output lifts the rate limitation (i.e. col. 22, ll. 50-54; no back pressure signal if buffer is not full because after congestion drops, it is inherent to start transmitting to output again at the prior uncongested bandwidth to try to maximize transmission rate); buffers are associated with both ports with distinct priority; limitation is enforces at both ends (i.e. fig. 9, col. 22, ll. 50-54).

Art Unit: 2663

11. Claims 24-27 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ramamurthy et al. in view of Khacherian et al. as applied to claim 23 above, and further in view of Hluchyj et al.

Ramamurthy et al. discloses input ports (i.e. 100), but does not specifically disclose a priority for data units and using leaky bucket. However, Hluchyj designate a priority (i.e. fig. 4, col. 3, ll. 11-23) and high priorities (i.e.  $CLP=0$ ) are not in violation while low priorities are (i.e.  $CLP=1$ ) based on leaky bucket algorithm (i.e. 204). Therefore, it would have been obvious to an ordinary person skilled in the art at the time of the invention to include priorities and leaky bucket as taught by Hluchyj et al. with the method and switch of Ramamurthy et al. in order to regulate cell flow.

12. Claims 33, 37-42, 48-52 and 54 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ramamurthy et al. in view of Shinohara.

Regarding claims 33 and 42, Ramamurthy et al. disclose a switch comprising a plurality of input ports (i.e. fig. 1, 100; input ports 1... M); a plurality of output ports (i.e. fig. 1, output lines 1.. M); and switch fabric (i.e. fig. 1, buffered switch, core switch bus, core switch LSI); wherein the data stores are arranged to buffer data units (i.e. figs 1 and 9, output buffers) for delivery to output ports (i.e. fig. 1, output lines 1... M), and if the backlog reaches a particular level (i.e. col. 22, ll. 42-52, backlog occurs when the output buffer is full), the output control (fig 1, CAC, bandwidth allocator), to enforce a rate limitation (i.e. fig. 9, col. 22, ll. 50-53; monitor back pressure and control data flow), wherein the additional data units in violation of the rate



Art Unit: 2663

limitation are filtered (i.e. col. 22, ll. 53-66; violation of rate and filtered corresponds to full buffer means congestion and cells are dropped). Ramamurthy et al. does not specifically disclose output controls monitoring two or more data stores. However, Shinohara teaches output control (i.e. fig. 8, 3, 3a, 4) monitoring the backlog of buffered data units in two or more of said plurality of data stores (i.e. fig. 8, 2-1, 2-2, 2-3, 2-4). Therefore, it would have been obvious to an ordinary person skilled in the art at the time of the invention to include using the output controls to monitor the backlog of two or more buffers as taught by Shinohara with the method and apparatus of Ramamurthy et al. in order to conserve hardware by using less controllers to monitor the buffers.

Regarding claims 37-41 and 48-52 and 54, Ramamurthy et al. disclose a switch including when backlog falls, the output lifts the rate limitation (i.e. col. 22, ll. 50-54; no back pressure signal if buffer is not full; therefore, after congestion drops, it is inherent to start transmitting to output again at the prior uncongested bandwidth to try to maximize transmission rate); buffers are associated with both ports with distinct priority; limitation is enforced at both ends (i.e. fig. 9, col. 22, ll. 50-54).

13. Claims 34-36, 43-47 and 53 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ramamurthy et al. in view of Shinohara as applied to claims 33 and 42 above, and further in view of Hluchyj et al.

Ramamurthy et al. discloses input port (i.e. 100), but does not specifically disclose a priority for data units and using leaky bucket. However, Hluchyj designate a priority (i.e. fig. 4,

Art Unit: 2663

col. 3, ll. 11-23) and high priorities (i.e. CLP=0) are not in violation while low priorities are (i.e. CLP=1) based on leaky bucket algorithm (i.e. 204). Therefore, it would have been obvious to an ordinary person skilled in the art at the time of the invention to include priorities and leaky bucket as taught by Hluchyj et al. with the method and switch of Ramamurthy et al. in order to regulate cell flow.

### *Response to Arguments*

14. Applicant's arguments with respect to claims 2-4, 11-15, 21, 24-27 and 31 have been considered but are moot in view of the new ground(s) of rejection.

15. Applicant's arguments filed 5/25/01 have been fully considered but they are not persuasive.

Regarding claims 1-22, applicant asserts that the reference does not disclose each output ports operatively associated with a plurality of data stores. Examiner respectfully disagrees. Ramamurthy et al. discloses each of a plurality output ports (i.e. output lines in Fig. 1) operatively associated with a plurality of data stores (i.e. fig. 1, 100, 120, 130, 140, 150). Therefore, that limitation is in the reference and the rejection is maintained.

Regarding claims 23-34, applicant asserts the references alone or in combination do not disclose or suggest the output controls monitor the backlog level of data units via requests from an input controller that is also physically associated with the input port. Examiner respectfully disagrees. As the applicant correctly pointed out, Ramamurthy discloses monitoring of the buffer and controlling the buffers and Dighe et al. teaches sending and receiving the requests.

Art Unit: 2663

Therefore, it would have been obvious to have a controller (i.e. 12) at the input side as well as at the output side in order to communicate. In addition, applicant asserts that the references do not show output controller monitors the backlog of data units stored in the data store through information transmitted in requests. As stated above, Ramamurthy discloses monitoring backlog of buffered data at the plurality of data store (i.e. col. 22, ll. 45-55) and sending back pressure signal (i.e. 930) when full. Therefore, it would have been obvious to monitor and send the backlog signal as "request" in order to inform the other side of possible congestion.

In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

### ***Conclusion***

16. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Heiss is cited to show leaky bucket flow control.

17. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jasper Kwoh whose telephone number is (703) 305-0101.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chau Nguyen, can be reached on (703) 308-5340.

Art Unit: 2663

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 305-4700.

18.

**Any response to this action should be mailed to:**


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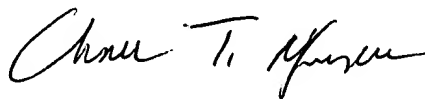
Washington, D.C. 20231

**or faxed to:** (703) 872-9314

Hand-delivered responses should be brought to Crystal Park II, 2021 Crystal Drive, Arlington. VA., Sixth Floor (Receptionist).

Jasper Kwoh

  
August 7, 2001



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SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2600